

# WATER CONSERVATION NEWS

*“Building sustainability, reliability, and accountability through efficient water use”*

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## State Funding for Water Use Efficiency and Related Projects

*By Manucher Alemi, Office of Water Use Efficiency*

In November 2002, California voters passed Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002. This bond act provided funding for water use efficiency projects. The funding was to help implement CALFED Water Use Efficiency Program goals. The CALFED Record of Decision Water Use Efficiency objectives are to achieve water savings and water quality and in-stream flow improvements. The WUE approach, then, is to use incentive-based actions such as planning, technical, and financing assistance to local water users and water suppliers.

The Office of Water Use Efficiency staff is excited to have the opportunity to deliver one of the CALFED WUE Program actions which is to assist the local agencies in their water use efficiency programs. OWUE staff thinks that there is ample opportunity for water conservation in California.

Chapter 7 of Proposition 50 provides \$180 million for water use efficiency projects; \$60 million is for recycling (managed by the State Water Resources Control Board) and \$120 million is for agricultural and urban water conservation. Chapter 6 provides \$50 million for desalination feasibility and implementation projects. The funding for the desalination and agricultural and urban water conservation projects is managed by the OWUE. Funding is made available through a public Proposal Solicitation Package (for details visit [www.owue.water.ca.gov/finance/index.cfm](http://www.owue.water.ca.gov/finance/index.cfm)).

Chapter 8 of Proposition 50, administered jointly by DWR Division of Planning and Local Assistance and SWRCB, provides approximately \$380 million in grant funding for Integrated Regional Water Management programs. The draft guidelines for Chapter 8 were issued by DWR and the SWRCB and are currently being revised to address public comments. Funding is available for projects that protect communities from drought, protect and improve water quality and improve local water security by reducing dependence on imported water. Water use efficiency is an important component of IRWM. For more detail on the IRWM Grant Program visit [www.grantsloans.water.ca.gov/grants/integregio.cfm](http://www.grantsloans.water.ca.gov/grants/integregio.cfm).

The Proposal Solicitation Packages are developed with input from the public. OWUE encourages those interested in water conservation, recycling, and desalination to visit the Web sites listed above for more detail information and for those who meet our requirements for participation in current and future grant programs.

**Water Conservation News** provides information on water use efficiency developments. This free newsletter is published biannually by the California Department of Water Resources, Office of Water Use Efficiency.

**Subscriptions:** If you want to receive this newsletter, send your name and address to: Department of Water Resources  
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**Water Conservation News** is available online: [www.owue.water.ca.gov/news/news.cfm](http://www.owue.water.ca.gov/news/news.cfm)

For more information about DWR's water use efficiency programs call:

**Water Use Efficiency Office**  
(916) 651-9236

**Vacant**  
Chief

(916) 651-9674

**Manucher Alemi**

Data Services and Program Development  
(916) 651-9662

**Fawzi Karajeh**

Water Recycling and Desalination  
(916) 651-9669

**David Todd**

Technical Assistance and Outreach  
(916) 651-7027

**Simon Eching**

Program Development  
(916) 651-9667

**Baryohay Davidoff**

Agricultural Council Support  
(916) 651-9666

**Debra Gonzalez**

Financial Assistance  
(916) 651-7026

**Kent Frame**

CIMIS

(916) 651-7030

Water use efficiency information is also available from DWR district staff:

**X. Tito Cervantes**

**Northern District**

2440 Main Street  
Red Bluff, CA 96080-2398  
(530) 529-7389

**Ed Morris**

**Central District**

3251 S Street  
Sacramento, CA 95816-7017  
(916) 227-7578

**David Scruggs**

**San Joaquin District**

3374 E. Shields Avenue  
Fresno, CA 93726-6990  
(559) 230-3322

**David Inouye**

**Southern District**

770 Fairmont Avenue  
Glendale, CA 91203-1035  
(818) 543-4600

We welcome any comments, suggestions, and story ideas; please send them to:

**Water Conservation News**

**Editorial Staff**

Department of Water Resources  
Office of Water Use Efficiency  
P. O. Box 942836  
Sacramento, CA 94236-0001

E-mail: [goettl@water.ca.gov](mailto:goettl@water.ca.gov)  
Telephone: (916) 651-9605  
Fax: (916) 651-9849

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## ***New CIMIS Stations for 2004***

*By Kent Frame*

CIMIS staff is pleased to announce we have entered into agreements to install five new stations this year and we are already beginning the process for three more. Three of the new stations are currently operational and the other two will be completed soon.

The first station activated was the Lake Arrowhead station (#192) sponsored by the Lake Arrowhead Community Services District. This is a region that is progressively pursuing the use of automated ET controllers and CIMIS is providing the necessary data support for the program. The second station to be installed was the Pleasanton station #191. The cooperators, Zone 7 Water Agency and the City of Pleasanton, are utilizing the station for irrigation scheduling and water planning primarily in the urban sector. The Oakdale Irrigation District is sponsoring the third station, #193. This is a predominantly agricultural region but the station will also be providing a water efficiency tool for the growing urban demand.

There are currently two stations scheduled for installation. The sponsors are the Placer County Water Agency (PCWA) and Santa Clara Valley Water Agency (SCVWA). The PCWA station will be an integral part



of the agency's developing educational center and automated ET controller program. The station will provide much needed data for the agricultural sector and the burgeoning urban sector in this County. The SCVWA station will be replacing a station that was recently lost in the South San Francisco Bay Region and supported the tremendous water conservation efforts by the SCVWA in this urban environment.

All of these stations, besides providing local assistance, help to fill data gaps in the CIMIS network and will provide benefits statewide. If anyone is interested in more information about the CIMIS program or becoming a cooperator please visit the CIMIS Web site at [www.cimis.water.ca.gov](http://www.cimis.water.ca.gov) or contact a CIMIS representative listed on the web site.

### ***Office of Water Use Efficiency Mission Statement***

In cooperation with others, we promote the efficient and beneficial use of California's water resources to sustain our human and natural environment.

## ***CIMIS as a Tool for Water Conservation***

*By Bekele Temesgen and Kent Frame*

Society's perception of water conservation has changed over the years; no longer is it considered as a temporary action during droughts, but a viable long-term source that needs to be incorporated in the planning process. Water conservation also has many other benefits including increased money savings, improved water quality, safe and clean environment, and increased yield. Various technologies are becoming available that can provide the right amount of water at the right time, be it in agricultural, residential, commercial, industrial, or institutional settings. The problem lies in the determination of the right amount of water for various purposes, which is usually determined through extensive research.

The California Irrigation Management Information System (CIMIS), a product of such research by the California Department of Water Resources and UC Davis, was designed to assist in estimating the water demands of different plants. CIMIS has been providing this information to the public free of charge for over 20 years. Although it is difficult to quantify how much CIMIS has contributed to the statewide water conservation effort, various studies by UC Davis and UC Berkeley scientists have documented the potential and real water and money saved by using CIMIS data. This makes CIMIS a very important tool in water conservation.

An article published in the October 2003 issue of *Water Conservation News*, titled "CIMIS – Past, Present and Future," discussed how CIMIS developed from a few scattered stations in the 1980s to over 125 fully automated weather stations at the present time with proportionately higher growth in the number of CIMIS data users. It also presented future plans for CIMIS including Web site upgrades, remote sensing, non-ideal site studies, and ET based irrigation controllers. In this issue, our

focus is on the progress made since the previous article was published.

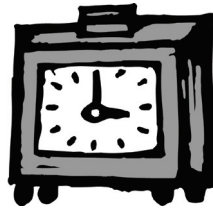
### ***Web Site Upgrade***

In today's world, the ease and speed at which users can retrieve information is very important. CIMIS understood this early on and has evolved with changing demands using available resources. In February 2004, CIMIS released a newly designed Web site to meet the growing demand for its data; interested readers can visit [www.cimis.water.ca.gov](http://www.cimis.water.ca.gov). All the improvements and additional features discussed in the October 2003 issue of WCN have been incorporated and user feedback on the new Web site has been very encouraging.

### ***Data Acquisition***

CIMIS stations collect data 24 hours a day and 7 days a week. The dataloggers at the stations interrogate the sensors once every minute and average 60 consecutive readings to get hourly measurements. The hourly data and the corresponding daily averages/totals are temporarily stored in the datalogger.

A computer using communication software at DWR headquarters polls the dataloggers starting at midnight every night to retrieve the data for final storage in the CIMIS database. CIMIS has been using the DOS-based TELCOM software to retrieve data from the dataloggers. With an increase in the volume of data that needs to be downloaded at a time, CIMIS is in the process of upgrading the communication software to the Windows-based LoggerNet. With this new data acquisition software, CIMIS is hoping to be able to poll the dataloggers more frequently thus providing more "real time" data than the current method.

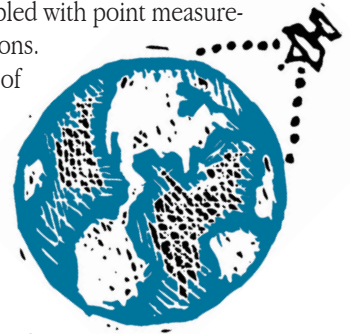


### ***Remote Sensing***

Because of spatial data gaps in the CIMIS weather station network, CIMIS initiated

a project that is looking into the use of satellite data coupled with point measurements at the stations.

The end product of this project is a spatially distributed reference evapotranspiration (Eto), including points where there are no measurements of weather parameters. The first phase of the project is near completion and results will be incorporated into our Web site for public access. The public will then be able to retrieve daily average ETo by clicking on ETo maps that will be released in the next 2 to 3 months.



### ***Net Radiation Study***

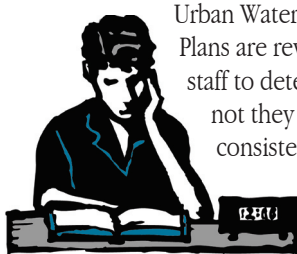
CIMIS recently conducted a study comparing ETo and net radiation (Rn) estimated by the Modified Penman and the Penman-Monteith methods. Results from the study have shown that there are no significant differences between ETo values estimated by the two methods (results are being published in peer-reviewed journals and will be posted on our Web site in the near future). There were, however, differences between Rn estimates. Since there was no measured Rn data at the time, it was recommended that CIMIS purchase equipment necessary to measure Rn and conduct further studies. Accordingly, CIMIS purchased one CNR1 and four NR-Lite net radiometers and installed them near the CIMIS weather station at UC Davis. Data has been collected since July 17, 2004, and we will continue collecting for at least one year to incorporate the effects of seasonal variability. At the end of the study period, comparisons will be made between measured Rn from net radiometers and estimated Rn from the nearby CIMIS station. Also, Rn measured by the CNR1 and NR-Lite net radiometers will be compared to evaluate the performance of NR-Lites. The instruments will then be removed from the Davis site and installed next to other CIMIS stations for further studies.

*Continued on Page 4*



## **2005 Urban Water Management Plan Updates Due December 31, 2005**

California Water Code § 10644(a) requires urban water suppliers to file with the Department of Water Resources, the California State Library, and any city or county within which the supplier provides water supplies, a copy of its Urban Water Management Plan no later than 30 days after adoption.



Urban Water Management Plans are reviewed by DWR staff to determine whether or not they are complete and consistent with the Water Code. Agencies subject to the Urban Water Management

Planning Act must have adopted a complete plan that meets the requirements of the law and submitted it to DWR to be eligible for drought assistance or funds received through DWR. Results are provided to urban water suppliers through a review letter. DWR provides a legislative report to the California Legislature one year after plans are due to the Department.

DWR provides technical assistance to urban water suppliers to help them meet the requirements of the act. Program staff provides information on how to prepare water management plans, implement water conservation programs, and understand the requirements of the act. The DWR Office of Water Use Efficiency is in the process of updating the Urban Water Management Planning Guidebook Worksheets and Demand Management Measure Worksheets for the 2005 UWMPs. These worksheets are used by DWR staff to review UWMPs for completeness. They may be useful to suppliers seeking to organize the information in the UWMPs. They will be posted at: [www.owue.water.ca.gov](http://www.owue.water.ca.gov). The dates and locations for Urban Water Management

Plan workshops to be conducted at various locations around the state will also be posted on the OWUE Web site in January and February 2005.

A complete Urban Water Management Plan can be a foundational document and source of information for Senate Bill 610 Water Supply Assessments and SB 221 Written Verifications of Water Supply requirements. UWMPs serve as a long range planning document for water suppliers and a critical source document for cities/counties as they update General Plans. These planning documents are linked and interdependent. It is crucial that cities, counties, and water suppliers work closely when developing and updating these planning documents.

If you have questions regarding compliance with the Urban Water Management Planning Act, please contact David Todd at (916) 651-7027 or [dtodd@water.ca.gov](mailto:dtodd@water.ca.gov) or Chris Fakunding at (916) 651-9673 or [cfakund@water.ca.gov](mailto:cfakund@water.ca.gov).



## **Urban Water Management Plan Workshops**

The State Water Code requires all water agencies serving 3,000 or more connections or 3,000 or more acre-feet per year to file an urban water management plan (UWMP) with the Department of Water Resources every five years. The next deadline for the filing of plans is December 2005. There is no need to panic, however, DWR and CUWCC want to help you with this requirement.

A guidebook on the preparation of UWMPs is being developed. CUWCC will also assist member agencies in using CUWCC's BMP reporting database to complete the demand management measures section of the UWMP. And a series of workshops throughout the state will give you step-by-step instructions on what information will be required. The workshops will be conducted in early 2005 by CUWCC and DWR staff. Check the calendar page of CUWCC's Web site at [www.cuwcc.org](http://www.cuwcc.org) for detailed location and registration information.



**CIMIS** *continued from page 3*

### **Other Developments**

CIMIS staff are involved in the management of various projects including the study of evapotranspiration-based irrigation controllers, also known as ET controllers. As discussed in the October 2003 issue of Water Conservation News, DWR awarded Prop 13 urban grant funds to the East Bay Municipal Utility District, Municipal Water District of Southern California, and the City of Los Altos. Work on these projects has already begun. Another project involves the partnering with the California Urban Water Conservation Council non-ideal site program. This investigation is looking into establishing weather stations and developing ETo estimates on surfaces other than grass.

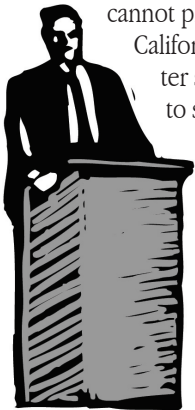
For more information about any of these programs or CIMIS, contact Bekele Temesgen at (916) 651-9679 or Kent Frame at (916) 651-7030, or visit [www.cimis.water.ca.gov](http://www.cimis.water.ca.gov).

## Orange County Water District Celebrates New Local Water Supply

*OWUE Water Recycling and Desalination Staff*

On September 20, 2004, Orange County Water District and Orange County Sanitation District held the official groundbreaking ceremony for its new \$487 million Groundwater Replenishment (GWR) System water purification project. The ceremony was attended by Lester Snow, the Director of the California State Department of Water Resources, as well as 150 elected officials, community leaders and industry professionals.

During the ceremony, Mr. Snow stated, "The Department of Water Resources in an attempt to secure California's long-term water supply is attempting to promote an integrated regional water resource management strategy. We cannot pretend that the State of California can fix all the local water supply issues, but rather try to support activities such as this. As we go around the state to areas that have wastewater potential and groundwater potential, we point to this region and hope they will come to tour the project and understand what is being done here."



I pledge on behalf of the Schwarzenegger administration to continue supporting this activity. We have in the past found \$30 million worth of Proposition 13 grants that have supported this. We hope to continue some financial support and technical support, and be a part of this historic program here. We congratulate all of you for participating in it."

OCWD manages and protects the large groundwater basin underlying north and central Orange County. OCWD is a special district, separate from Orange County or any city government. It was created by the California Legislature in 1933 to oversee

Orange County's groundwater basin. The groundwater basin supplies more than half of the water needs for 2.3 million residents in the cities of Anaheim, Buena Park, Cypress, Costa Mesa, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Irvine, La Palma, Los Alamitos, Newport Beach, Orange, Placentia, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster and Yorba Linda.



The GWR System, a state-of-the-art water purification project, takes highly recycled water, formerly wastewater, that is currently released into the ocean and purifies it using the same technologies that purify baby food, fruit juices, medicines and bottled water. The GWR System will create a new supply of extremely high-quality water for use in an expanded seawater intrusion barrier and to augment groundwater supplies for north and central Orange County residents. When the project's Advanced Water Purification Facility is complete in 2007, it will produce 70 million gallons of purified water per day, enough water to provide for 144,000 families annually. To learn more about the project visit [www.ocwd.com](http://www.ocwd.com).

Congratulations to both OCWD and OCSD for their achievements on the GWR system project. It is worth mentioning that the GRS Project's communications team was awarded the top honor of 2004 Public Education "Program of the Year" from the WaterReuse Association for their work on the project announced in September at the WaterReuse Association's 2004 Annual Symposium held in Phoenix, Arizona.

## Quality on Demand Recycled Water: A Brilliant Approach to Further Recycled Water Uses

*Fawzi Karajeh*

Recycled water, or the term "reclaimed water" now incorporated into California law, is defined in statutes as "water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur" (California Law, Government Code, Section 65040.12). Recycled water can be derived from a variety of wastewater sources such as municipal, industrial and agricultural. Water recycling can mean the treatment of wastewater to a quality that is usable or, more broadly, the activities of treatment, storage, distribution, and even the final application of recycled water.

The type of wastewater treatment and the degree to which it is treated to make recycled water suitable for use depends on the types of use, the potential exposure of humans to recycled water and the public health implications, and the water quality required beyond health considerations. The basic levels of treatment include primary, secondary, and tertiary. Not all wastewater receives all three levels of treatment. In California, secondary treatment is commonly the minimum level of treatment to meet legal requirements for discharge to surface waters and for many uses of recycled water. Tertiary treatment is sometimes required for discharge to surface waters to protect fisheries or protect some uses of the waters. Tertiary treatment is often required for recycled water where there is a high degree of human contact. Disinfection is usually required for either discharge or recycled water use to kill bacteria, parasites, and viruses that can cause illness.

The Department of Health Services specifies the levels of treatment for recycled water and publishes the standards in Title

*Continued on Page 6*



## Quality *continued from page 5*

22 of the California Code of Regulations. Beyond the treatment required for health protection, certain uses have specific water quality needs. High sodium or boron in water can be harmful to crops. Water hardness can cause scaling in industrial boilers. Nitrogen and phosphorus can stimulate algal growth in ponds or cooling towers. Sometimes specialized forms of tertiary treatment are needed to remove specific chemicals that would make recycled water unusable. In recent years a more innovative approach is being practiced. Some customers with special quality needs may be served by their own delivery line from the water recycling facility. Recycled water producers under this approach design a separate additional treatment steps to provide two or more "Quality-On-Demand Recycled Waters." To add flexibility for customers at an acceptable additional cost, QOD recycled water can be produced per the users' specification through delivery agreement. This approach not only adds flexibility for customers needed water, but also helps to further the use of recycled water in California, in return, reduce the pressure on the limited conventional water sources in the State.



Reverse osmosis membrane modules (high-pressure pumps enable water passage through membranes)

In California, West Basin Municipal Water District has been the leader in producing QOD recycled waters or what they call it "Designer Water" to add flexibility for customers to meet their non-potable water demand through this reliable water supply source. WBMWD currently produces and sells approximately 43 million gallons of recycled water every day. WBMWD serves a population of about 850,000 people living in 17 cities located within the South Bay of Los Angeles County. The West Basin Water Recycling Plant in the City of El Segundo produces five different qualities of recycled water, all of which meet the

treatment and water quality requirements specified in the California Department of Health Services Water Recycling Criteria for the different recycled water applications. These 5 QOD recycled waters are:

**Tertiary Water:** Secondary treated wastewater that has been filtered and disinfected for a wide variety of industrial and irrigation uses.

**Nitrified Water:** Tertiary water that has been nitrified to remove ammonia for industrial cooling towers.

**Softened Reverse Osmosis Water:** Secondary treated wastewater pretreated by either lime clarification or microfiltration, followed by reverse osmosis and disinfection for groundwater recharge, which exceeds, most of the time, the state and federal drinking water standards.

**Pure Reverse Osmosis Water:** Secondary treated wastewater that has undergone microfiltration, Reverse Osmosis and disinfection for Chevron's low-pressure boiler feed water.

**Ultra-Pure Reverse Osmosis Water:** Secondary treated water that has undergone microfiltration, Reverse Osmosis, disinfection and second-pass reverse osmosis for high-pressure boiler feed water.

QOD recycled water could be expanded to include other uses such as computer chips industry, textile dying industry, power generation facilities, and nurseries.

It is true that there is most likely additional cost to produce QOD recycled water but for many communities, an investment to do that helps to solve other technical, economic, and environmental problems. This concept can be used to forestall a water shortage by conserving freshwater, provide a reliable local source of water, provide drought protection, improve the economic efficiency of investments, and improve community benefits by creating more jobs and human and environmental health protection. QOD recycled water approach is a brilliant idea and it may become a marketing strategy for many recycled water purveyor in many California communities and elsewhere. If the benefits supersede the cost, why not?

## International Water Association Performance Indicators for Water Loss

*By Simon Echling*

A water audit and leak detection program has long been advocated as an effective way to control loss of water. As the name suggests, it is a two-part program. A water audit is an accounting procedure that helps to determine the water distribution system efficiency. The efficiency of the system is measured by the amount of water lost from the system, referred to in the water industry as unaccounted-for water. It is defined as water lost to leaks and other kinds of avoidable losses relative to total water production, and is usually expressed in percentage. In California, the goal for unaccounted-for water has generally been set at 10 percent or less. Although the term unaccounted-for water percentage is widely used in the water industry, the general consensus is that the term is misleading. Furthermore, some experts believe that it has shortcomings as a performance indicator of water loss status. These shortcomings, they contend, include a lack of a worldwide standard definition of unaccounted-for water, inconsistency in the definition of the various components of water use or loss, and the fact that percentage indicators translate nothing about water volume and costs. The new trend in water loss performance indicators is the International Water Association's Performance Indicators for Water Supply System Losses.

IWA, one of the largest international associations in the water and wastewater field, was founded in 1999 by the merger of the International Association of Water Quality and the International Water Supply Association. The IWSA organized the Task Force on Water Losses in 1996, which included members from the United States, France, United Kingdom, Germany, Japan, and Spain. Between 1997 and 2000, the Task Force, with contributions from experts from several countries, developed an array

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## A Legislative Boost for Water Desalination as an Alternative Water Supply Strategy in California

*Fawzi Karajeh and Felbi Benjema*

Brackish water or seawater desalination is not a new idea. It is reported that worldwide, desalination plants produce about 8.5 billion gallons of fresh water a day, of which 4 billion gallons a day are produced and used in the United States. It is also estimated that desalination might grow by 10 to 20 percent annually in the coming decade.



The upcoming California Water Plan Update is expected to identify 25

Resource Management Strategies, one of which is water desalination. Desalination is one of the strategies that California is seriously considering to augment local water supplies.

The State Legislature has recognized the importance of oceanwater and brackish water desalination through legislation.

**1999:** Senate Bill 1062 (Poochigian, 1999 - Water Code § 10004) required DWR to include in the California Water Plan Update a discussion of various strategies, including new water storage facilities, water conservation and recycling, desalination, conjunctive use, and water transfers.

**2002:** The Legislature approved Assembly Bill 2717 (Robert Hertzberg). The bill asked DWR to convene the California Water Desalination Task Force to look into potential opportunities and impediments for using oceanwater and brackish water desalination, and to examine what role the state should play in furthering the use of de-



salination technology. The Task Force completed its mission and in October 2003 DWR submitted to the Legislature a final report. One of the primary findings is that economically and environmentally acceptable desalination should be considered as part of a balanced water portfolio to help meet California's existing and future water supply and environmental needs.

**November 2002:** California voters passed Proposition 50, the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002. Chapter 6 of Prop 50, entitled Contaminant and Salt Removal Technologies, allocates the sum of \$100 million to be available for grants for oceanwater and brackish water desalination projects as well as projects for treatment or removal of contaminants such as MTBE, NDMA, Perchlorate, and other emerging contaminants.

**August 2003:** Governor Davis approved AB 314 (Kehoe), which declared that it is the policy of the State that desalination projects developed by or for public water entities be given the same opportunities for state assistance and funding as other water supply and reliability projects, and that desalination be consistent with all applicable environmental protection policies in California.

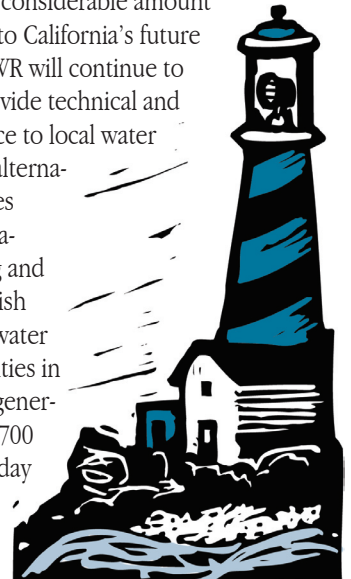
**September 21, 2004:** Governor Schwarzenegger approved AB 2918 (Laird), which charged the Public Utility Commission to evaluate the interrelationship between the commission's electricity policy and water policy as it relates to saline water conversion through oceanwater desalination. The report pursuant to this bill is

due to the Governor and the Legislature by January 1, 2006. It is expected to evaluate whether desalination plants should get cheaper electricity. DWR

is expected along with other state agencies to participate in this evaluation.

**September 22, 2004:** Governor Schwarzenegger approved SB 318 (Alpert), which amended the Urban Water Management Planning Act that requires urban water suppliers to prepare and adopt urban water management plans for submission to the Department of Water Resources. This bill would require that such plans include a new component consisting of a description of the opportunities for the development of desalinated water, including, but not limited to, oceanwater, brackish water, and groundwater, as a long-term supply.

So, given the legislative boost to desalination combined with available financial resources, feasible desalination projects could contribute considerable amount of potable water to California's future water budget. DWR will continue to promote and provide technical and financial assistance to local water agencies to find alternative water supplies including desalination. The existing and envisioned brackish water and oceanwater desalination facilities in California could generate an estimated 700 million gallons a day of desalinated water in the next decades.



## AGRICULTURAL WATER MANAGEMENT COUNCIL



### ***New Publication***

The Agricultural Water Management Council moved into a new phase of its operation with the production and distribution in August 2004 of *Best Management*, a newsletter distributed to its members and selected members of California's water industry.

"We're excited to provide this valuable information that can be used by our members and water districts contemplating joining the Council," said Mike Wade, Executive Director. Wade also noted that *Best Management* provided an update of AWMC member activities, including the availability of financial grants to assist districts in developing water management plans; and efforts to apply and utilize Proposition 50 grant funding to further AWMC's goals. In addition, the newsletter reported the growing membership at nearly 4 million irrigated retail acres. "Perhaps the most valuable information presented in the newsletter were the articles about individual water districts and how they are developing management plans and the elements involved in those plans," Wade added. "These examples are valuable because other districts can recognize their current efforts which may already include these elements and realize they can develop BMPs and become a part of the Council."

*Best Management* is scheduled for a quarterly distribution and online publication. Contact AWMC at (916) 441-7868 to receive copies of *Best Management*.



### ***New Online Reporting for USBR Water Conservation Plan Annual Updates***

The Agricultural Water Management Council has entered into a new contract with the U.S. Bureau of Reclamation to administer and host USBR's Annual Update Web site for federal contractors. The Reclamation Reform Act of 1982 and the Central Valley Improvement Act of 1992 requires its agricultural water supply service contractors to prepare and implement a Water Management Plan every five years with an annual update. To assist contractors in preparing Annual Updates, AWMC is developing a Web site for online reporting of the annual updates.

The Web site will contain the forms necessary for districts to complete and submit their annual updates online. The forms can be accessed, completed and submitted online on a secured Web site using a username and password. Users will be able to complete any number of the steps, save their work and retrieve it by a simple login method before submitting the completed report online. This new online reporting is part of AWMC's growing online services a feature AWMC hopes to expand in the future to eventually encompass the entire water management plan reporting process. By making these features available to members it can help facilitate the water management plan development and review process.

Contact AWMC at (916) 441-7868 or visit [www.agwatercouncil.org](http://www.agwatercouncil.org).

## CALIFORNIA URBAN WATER



### ***Assignment from the Legislature***

*By Mary Ann Dickinson, Executive Director*

If you are frustrated with your water agency because you can't seem to get enough water savings from your current landscape programs, take heart. The Legislature agrees with you.

In September, Governor Schwarzenegger signed AB 2717, a bill which asks the California Urban Water Conservation Council to take a look at landscape water issues statewide and to make recommendations for improvements. It asks CUWCC to set up a stakeholder taskforce, composed of representatives from the water agencies, landscape contractors, the green industry, cities and counties, environmental groups, and state and federal agencies. The main purpose of the taskforce is to examine the old AB 325 legislation, recommend changes and look at other landscape issues as follows:

- Potential labeling requirements and performance standards for landscape irrigation equipment sold or installed in California;
- Potential use and application of water budgets for irrigated landscaped areas;
- Potential standardized training and certification requirements for personnel engaged in the business of design, installation, operation, or maintenance of irrigated landscapes, including water budgets;
- Potential use of incentives and disincentives to encourage the adoption and implementation of landscaping efficiency measures;
- Other measures for improving the water efficiency of existing irrigated landscapes; and



## CONSERVATION COUNCIL

- Areas for further research and development regarding water efficient plant varieties, water efficient irrigation equipment, and remote monitoring of landscape water consumption, together with plans for organizing, funding, and conducting the research.

This is a comprehensive assignment for CUWCC, and one with a very short time frame. The taskforce must be convened by January 1, 2005, and must finish its work by December 31, 2005, with a final report submitted to the Legislature at that time. The report will contain recommendations for legislation, municipal ordinances, and other programs to improve the potential for greater landscape water savings statewide. The expense for the taskforce will be borne by the participating stakeholders, according to a provision in the law. CUWCC is currently in the process of fundraising for this effort, determining how the stakeholders will be chosen for the taskforce, and developing a work plan for the assigned tasks. We are very lucky to have Marsha Prillwitz, retired Chief of the DWR Water Use Efficiency Office, assisting us in this project.

For further information on the AB 2717 Landscape Taskforce or to find out how you can participate contact CUWCC at (916) 552-5885.



### ***How Saving Water Saved Energy Or How A Lowly Restaurant Pre- Rinse Spray Valve Made History***

*By Mary Ann Dickinson, Executive Director*

Saving hot water saves energy. It saves in two ways: First, in the transportation and the treatment of the drinking water

to the customer, both of which require energy. Second, in the gas or electric heating of the hot water for showers, washing clothes, and dishwashing. Until recently, however, the connection between water and energy conservation was never beneficially united into one program.

In 2002, with the state's energy crisis still looming, the California Public Utilities Commission began awarding grants for energy conservation programs. The California Urban Water Conservation Council thought this might be a good opportunity to explore a joint energy and water conservation effort. A new highly-efficient spray valve had been recently tested at the Food Service Technology Center in San Ramon (California), and found to be both water-efficient and extremely effective in cleaning dishes. Since dishwashing is about two-thirds of the total water use in a restaurant – and nearly half of that water is used to pre-rinse the dishes before putting them in the dishwasher – this valve had great potential for saving water and energy. The new spray valves use only 1.6 gallons per minute, whereas the older valves use 3 gallons or more per minute. CUWCC estimated that there were about 100,000 of these old inefficient valves in restaurants throughout California that were flowing at an unnecessarily high rate.



CPUC agreed that the energy savings were worth pursuing and, in 2002, awarded CUWCC \$2.4 million to directly install 16,900 spray valves in restaurants, in cooperation with 30 water supply agencies in the state. CUWCC hired a program contractor and began a major door-to-door pre-rinse spray valve replacement program directed at small and medium-sized food service establish-

ments. In this direct-install program, the valves were being replaced, free of charge, yielding savings in energy and water costs for the food service operators.

The preliminary results have been phenomenal:

- 16,896 valves were installed at a total cost of only \$50 per valve to the water agency;
- 156 gallons per day – or 56,940 gallons per year are being saved by each valve;
- Over 22 million gallons – or 2,940 acre-feet overall – are being saved by the valves each year;
- The actual cost per acre-foot of water saved is only \$57.47 – one of the lowest of any conservation program in history;
- Over 32.8 million Kw per year are being saved of electrical energy;
- Over 5.4 million therms per year are being saved of natural gas; and
- Customer satisfaction was an astounding 99.3 percent – only 105 valves were returned by the customers.

*(Note: These data are being verified by an independent evaluation firm, and the final results will be published once approved by CPUC.)*

The program was so successful that CPUC decided to fund a second phase of this program: an additional 20,000 valves will be installed in restaurants through the end of December 2005. By the time this "phase 2" of the program is finished, over one-third of the estimated old inefficient valves statewide will have been replaced. California is benefiting from the extraordinary water and energy savings achieved by this remarkable little device. So help us save water and energy by eating at your favorite restaurant!

For more information on CUWCC's pre-rinse spray valve program, or to find out how to participate, contact CUWCC office at (916) 552-5885.

## CALIFORNIA URBAN WATER CONSERVATION COUNCIL *cont.*

### **Urban Water Conservation Forges Ahead!**

*By Katie Shulte Joung, Project Manager, California  
Urban Water Conservation Council*

In 2002 a landmark cooperative agreement was signed awarding \$1.7 million over three years to the California Urban Water Conservation Council. The funding comes from three entities: the Department of Water Resources, the U.S. Bureau of Reclamation, and the CALFED Bay-Delta Authority. CUWCC's 319 member organizations include 181 water supply agencies that deliver nearly 80 percent of California's urban water; 29 environmental groups; and 109 other organizations interested in water efficiency issues. This agreement represents a significant commitment to assist urban water agencies across California to reach water use efficiency goals.

During the first two years of the project, CUWCC provided technical assistance to water agencies on understanding CUWCC's memorandum of understanding, implementing the 14 Best Management Practices (BMPs), and using the BMP reporting Web site. Our goal is to achieve 100 percent reporting by water agencies and, if not, to determine the types of additional assistance or information needed to complete the BMP reports. The funding also supports maintenance and upgrades to CUWCC's Web site and BMP reporting database. Additional projects completed include:

**Certification Support** CUWCC provided support for CBDA in defining protocols for implementation of a BMP program certification process.

#### **Water Savings Calculation Model**

A software program to estimate statewide water savings from BMP activities has been developed. This database relies on the data provided by water agencies on the implementation of quantifiable BMPs. The water savings

calculations will likely be used in the California Water Plan (Bulletin 160) and in various CBDA planning documents. The model also enables water suppliers to calculate their agency's water savings potential for use in program planning.

**Cost-Effectiveness Workshops** In the Fall of 2002 and 2004, CUWCC hosted a series of workshops to provide guidance on how to conduct cost-effectiveness analysis. Signatory water suppliers are expected to implement an applicable BMP only when it is cost-effective to do so. The workshops provided a general analytic framework from which to assess BMP benefits and costs, guidance on analysis time horizons, use of discounting and selection of discount rates, perspectives of analysis, use of sensitivity analysis, and an overview utility avoided costs.

**Revenue Impacts** In the Fall of 2004 CUWCC hosted workshops for water agency general managers, finance directors, rate managers, and other interested parties. The workshops provided information on: managing revenue stability through rate design; the effect of pricing on water consumption and conservation; incorporating future capital investment in

rate structure design; adaptive pricing benefits for drought management; equity versus efficiency; and the benefits to wastewater utilities in adopting a conservation oriented rate structure.

**BMP Costs and Savings Study** CUWCC updated its BMP Costs and Savings Study, a reference document summarizing the best available estimates of BMP-related program costs and water savings and added a new chapter on Program Cost Accounting. This publication is an integral resource to water agencies in analyzing and developing conservation programs. Additional updates on technologies, data and case studies will be incorporated in the publication in Year 3 of the project.

**PBMP Research** In 2003 CUWCC commenced work on the first of three

annual research projects to analyze possible new and existing Potential Best Management Practices (PBMPs). The following four devices were analyzed in the first year of the project: a) pre-rinse spray valves for the food service industry; b) X-ray film processor recycling units (medical industry); c) steam sterilizer retrofits; and d) weather-based irrigation controllers for residential and small commercial. Each device represents an opportunity to increase water conservation in the residential or commercial, industrial and institutional sectors. Research on five new PBMPs is now under way.

#### **Integrating Water Supply and Land Use Planning**

In the Spring of 2004 CUWCC conducted workshops for water suppliers, land-use planners, engineers, consultants and other interested parties on the implementation of Senate Bill 610 and Senate Bill 221 (Statutes of 2001). Using DWR's Guidebook for Implementation of SB 221 and SB 610 as a resource, the workshops provided information on integrating the legislative requirements with the California Environmental Quality Act and the Subdivision Map Act process; preparing a Water Supply Assessment or Verification; and using the Urban Water Management Plan as a source document.

**CALFED Year 4 Report** CUWCC assisted CBDA in the preparation of the Year 4 Comprehensive Report for CALFED's Water Use Efficiency program. This included compiling information, by hydrologic region, on conservation implementation by device or program, extracting data from Urban Water Management Plans, and developing a model to calculate statewide water savings and costs.

In the final year of the Cooperative Agreement, CUWCC will undertake the following projects:

**UWMP Workshops** In early 2005 CUWCC will host UWMP workshops



throughout the State to provide support to water suppliers on meeting new legislative requirements. A guidebook on the preparation of UWMPs is being developed. CUWCC will also assist member agencies in using CUWCC's BMP reporting database to complete the demand management measures section of the UWMP.

#### **Avoided Cost and Environmental Benefit**

In September 2004 CUWCC began a research project of significant proportions: How to best quantify the avoided costs and capital costs associated with new water supply – costs which are avoided when water conservation programs produce “saved water” – and how to estimate the environmental benefits and costs connected to those water conservation programs. Until now, there has not been an easy or standardized way to estimate these numbers that are important to assessing the true value of water conservation in California. A methodology and model will be available by the end of 2005.

**Large Landscape Technical Assistance** CUWCC will provide technical assistance and training on BMP 5 - Large Landscape Conservation implementation, including providing expert assistance in the field for water agencies developing landscape programs. This will include: a review of water district landscape customer data; on-site landscape technical assistance; guidance on the linkages between water pricing, billing, and landscape water use; and demonstration of landscape efficiency technologies to reduce drainage and erosion as well as water waste.

These projects will enable even greater urban water conservation efforts by California's water suppliers and help meet the needs of our growing population while preserving important natural resources. “This partnership among state and federal agencies has worked very well to promote coordinated water conservation efforts and we would like to see this collaboration continue in future

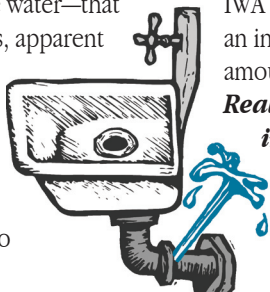
projects,” said Lucille Billingsley with the USBR.

Mary Ann Dickinson, Executive Director for CUWCC agrees, “It has been exciting for us to conduct these joint projects with the three agencies. Our membership has greatly benefited by the new research and technical assistance we have been able to provide as a result of this funding. The Cooperative Agreement has given the Council the ability to provide needed work products to DWR, the Bureau, and CBDA while also supporting the Council's mission and objectives.”

For additional information on these projects, visit [www.cuwcc.org](http://www.cuwcc.org).

#### **Loss** *continued from page 6*

of rational performance indicators for water losses. These performance indicators were published in the IWA Manual of Best Practice “Performance Indicators for Water Supply Services” in July of 2000. IWA water loss performance indicators are based on what IWA calls nonrevenue water—that is, unbilled authorized uses, apparent losses, and real losses. Apparent losses are losses associated with meter and billing errors, and unauthorized uses. Real losses are losses due to leaks and spills.



There are five appropriate performance indicators (PI) for nonrevenue water and real losses.

**Volume of nonrevenue water as percent of system input volume.** This is a financial indicator. It is a level 1 (basic) or first layer indicator in that it provides a

general management overview of the efficiency of the water undertaking.

**Value of nonrevenue water as percent of annual cost of running system.** This is also a financial indicator; however, it is a detailed indicator or what IWA refers to as level 3. Level 3 being an indicator that provides the greatest amount of specific detail.

**Real losses as a percent of system input volume.** A basic indicator that reflects inefficiency of use of water resources. While it reflects inefficiency of use, it is not suitable for assessing efficiency of management of distribution systems.

**Gallons/service line/day, when system pressurized.** A basic, level 1, operational indicator.

**Infrastructure leakage index (ILI).** Also an operational indicator, but it is a detailed or level 3 indicator. ILI is the ratio of

current annual real losses to unavoidable annual real losses (UARL). UARL represents the lowest technically achievable real loss at the current operating pressure.

Additional information about the IWA water loss performance indicators is available from various sources. If you are a member of American Water Works Association, additional information is available in the August 2003 edition of the e-Journal AWWA at [www.awwa.org](http://www.awwa.org) under the heading “Committee Report: Applying worldwide BMPs in water loss control.” An extensive treatment of the IWA PI is also presented in the book “Water Loss Control Manual” by Julian Thornton. Another valuable resource is the publication “Losses in Water Distribution Networks: A Practitioner's Guide to Assessment, Monitoring and Control,” by M. Farley and S. Trow.

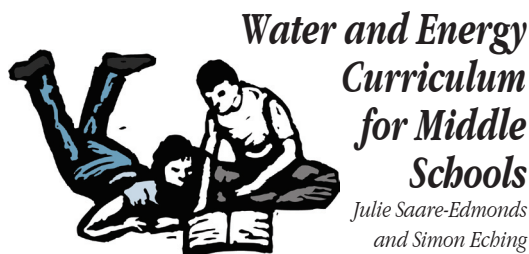


## WATER CONSERVATION NEWS

P. O. Box 942836  
Sacramento, CA 94236-0001



*Address Correction Requested*



### **Water and Energy Curriculum for Middle Schools**

*Julie Saare-Edmonds  
and Simon Eching*

A water and energy school curriculum for middle schools was recently created by Central Basin Municipal Water District and West Basin Municipal Water District. Funding for the curriculum was provided by the California Department of Water Resources' Office of Water Use Efficiency. Combining water and energy use is a logical step considering the interconnection between these resources. Hydropower accounts for nearly a quarter of the electricity produced in California, and much water is used in the generation of steam to produce electricity. Likewise a large amount of energy is used to pump, treat, heat and deliver water and wastewater.

The curriculum entitled *Conservation Connection Water and Energy Use in California*, consists of a student book and a teacher's guide. The water section addresses supply and demand, various uses

of water, and ways of stretching supplies through conservation measures and new technology. Topics such as how much rain falls in California and effects of groundwater overdraft are discussed. Uses of energy, sources of energy, and future sources of energy are addressed in the energy section. Both sections of *Conservation Connection* identify issues associated with meeting demand for water and energy including: supply, economics, environmental issues, population growth and increasing per capita use. The curriculum follows a logical progression of identifying sources, identifying users, the challenges facing water and energy producers and the encouragement of students to think of ways to overcome those challenges. Maps and graphics are used to illustrate groundwater geology, hydropower generation, water distribution and other information.

Various master worksheets and survey forms, which can be easily photocopied

or made into transparencies, are included in the Appendix of the teacher's guide. These teaching tools are used in a majority of the lessons, and as the teacher goes through the lessons, there is opportunity for students to survey and assess water and energy use and to plan and implement measures to reduce water and energy consumption at home and school.



*Conservation Connection* is easy to follow, interesting and fulfills numerous teaching goals in science, language arts and math. Correlations to California State Content Standards are listed at the end of the teacher's guide. This is a positive feature because it allows teachers to use the Conservation Connection knowing it will fulfill parts of other curriculums rather than taking time away from an already busy schedule. Copies of the student book and the teachers guide are posted at [www.owue.water.ca.gov](http://www.owue.water.ca.gov).

For more information, contact Simon Eching at (916) 651-9667 or [seching@water.ca.gov](mailto:seching@water.ca.gov).